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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,630	01/15/2004	Vipin Gopal	H16-25963 (256.054US1)	6113
21186	7590	09/26/2006	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			THANGAVELU, KANDASAMY	
			ART UNIT	PAPER NUMBER
			2123	

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/758,630	Applicant(s) GOPAL ET AL.	
	Examiner Kandasamy Thangavelu	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/24/04 and 6/17/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-20 of the application have been examined.

Information Disclosure Statement

2. Acknowledgment is made of the information disclosure statements filed on May 24, 2004 and June 17, 2004 together with a list of patents. The patents have been considered.

Drawings

3. The drawings submitted on January 15, 2004 are accepted.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-3, 6, 7, 11-13, 15, 16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Thalhammer-Reyero** (U.S. Patent 5,980,096) in view of **Datig** (U.S. Patent Application 2002/0198697).

6.1 **Thalhammer-Reyero** teaches Computer based system, methods and graphical interface for information storage, modeling and simulation of complex systems. Specifically, as per claim 11, **Thalhammer-Reyero** teaches a system for creating process models (Abstract, L1-11), the system comprising:

means for selecting a generic model for a component (CL61, L60 to CL62, L4; CL62, L63-66; CL73, L10-12; CL9, L32-45);

means for choosing assumptions about a component to be modeled; and

means for applying the assumptions to the symbolic generic model to derive a component specific model reflecting the assumptions (CL69, L3-22; CL36, L18-27; CL73, L9-14).

Thalhammer-Reyero does not expressly teach means for selecting a generic model for a component represented in a symbolic language. **Datig** teaches means for selecting a generic model for a component represented in a symbolic language (Page 84, Para 0604, L1-5; Page 87, Para 0615, L8-12; Page 87, Para 0616, L2-5). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the system of **Thalhammer-Reyero** with the system of **Datig** that included means for selecting a generic model for a component represented in a symbolic language, because that would allow the system to be realized in incremental forms and to be realized in real, perceivable shape of the symbolic language (Page 87, Para 0616, L2-5).

Per claim 12: **Thalhammer-Reyero** teaches that the generic model comprises symbolic representations that are environment independent (CL36, L18-23).

Per claim 13: **Thalhammer-Reyero** teaches that the specific model reflects the environment of the process to be modeled (CL36, L18-27).

Per claim 15: **Thalhammer-Reyero** teaches that the generic model comprises a proper ancestor model (CL61, L60 to CL62, L4; CL62, L63-66; CL73, L10-12; CL9, L32-45).

Per claim 16: **Thalhammer-Reyero** teaches that the specific model reflects the environment of the process to be modeled (CL69, L3-22; CL36, L18-27; CL73, L9-14).

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6.2 As per Claims 1-3, 6 and 7, these are rejected based on the same reasoning as Claims 11-13, 15, 16, supra. Claims 1-3, 6 and 7 are method claims reciting the same limitations as Claims 11-13, 15, 16 as taught throughout by **Thalhammer-Reyero** and **Datig**.

6.3 As per Claim 19, it is rejected based on the same reasoning as Claims 11, supra. Claim 19 is a computer readable medium claim reciting the same limitations as Claim 11 as taught throughout by **Thalhammer-Reyero** and **Datig**.

6.4 As per claim 20, **Thalhammer-Reyero** teaches a development environment for process modeling (Abstract, L1-11), comprising:

a set of generic models, each comprising a environment independent component (CL61, L60 to CL62, L4; CL62, L63-66; CL73, L10-12; CL9, L32-45);

an interface that provides selectable environment specific assumptions for each component to be modeled; and

a set of environment specific representations of the components derived from the generic models based on the assumptions (CL69, L3-22; CL36, L18-27; CL73, L9-14).

Thalhammer-Reyero does not expressly teach a set of generic models, each comprising a environment independent symbolic representation of a component. **Datig** teaches a set of generic models, each comprising a environment independent symbolic representation of a component (Page 84, Para 0604, L1-5; Page 87, Para 0615, L8-12; Page 87, Para 0616, L2-5).

7. Claims 4, 5, 8, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Thalhammer-Reyero** (U.S. Patent 5,980,096) in view of **Datig** (U.S. Patent Application 2002/0198697), and further in view of **Tan et al.** (U.S. Patent 6,263,255).

7.1 As per claim 4, **Thalhammer-Reyero** and **Datig** teach the method of claim 1. **Thalhammer-Reyero** and **Datig** do not expressly teach that the symbolic language is selected from the group consisting of Mathematica, Axiom, MAPLE and ADIFOR. **Tan et al.** teaches that the symbolic language is selected from the group consisting of Mathematica, Axiom, MAPLE and ADIFOR (CL7, L15-17). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the method of **Thalhammer-Reyero** and **Datig** with the method of **Tan et al.** that included the symbolic language being selected from the group consisting of Mathematica, Axiom, MAPLE and ADIFOR, because as per **Thalhammer-Reyero** that would allow using domain independent facilities to define all object classes and methods necessary to implement all domain dependent capabilities comprised in the system (CL36, L18-22).

7.2 As per claim 14, **Thalhammer-Reyero** and **Datig** teach the system of claim 11. **Thalhammer-Reyero** and **Datig** do not expressly teach maintaining a log of assumptions and applied model transformations. **Tan et al.** teaches maintaining a log of assumptions and applied model transformations (CL9, L66 to CL10, L3; CL10, L22-29; CL25, L36-41).

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7.3 As per claim 17, **Thalhammer-Reyero** and **Datig** teach the system of claim 11.

Thalhammer-Reyero teaches that multiple specific models are derived from multiple generic models corresponding to multiple components in a process t (CL69, L3-22; CL36, L18-27; CL73, L9-14; CL2, L44-48).

Thalhammer-Reyero and **Datig** do not expressly teach that multiple specific models are derived from multiple generic models corresponding to multiple components in a manufacturing facility. **Tan et al.** teaches that multiple specific models are derived from multiple generic models corresponding to multiple components in a manufacturing facility (CL1, L6-10; Abstract, L1-4).

7.4 As per Claims 5 and 8, these are rejected based on the same reasoning as Claims 14 and 17, supra. Claims 5 and 8 are method claims reciting the same limitations as Claims 14 and 17, as taught throughout by **Thalhammer-Reyero**, **Datig** and **Tan et al.**

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Thalhammer-Reyero** (U.S. Patent 5,980,096) in view of **Datig** (U.S. Patent Application 2002/0198697), and further in view of **Schroeder et al.** (U.S. Patent 6,535,795).

8.1 As per claim 9, **Thalhammer-Reyero** and **Datig** teach the method of claim 1.

Thalhammer-Reyero and **Datig** do not expressly teach that the generic component is a flash column. **Schroeder et al.** teaches that the generic component is a flash column (CL14, L51-62).

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention

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to modify the method of **Thalhammer-Reyero** and **Datig** with the method of **Schroeder et al.** that included the generic component being a flash column, because that would allow a chemical process to be controlled by adaptive process control using a combination of algorithms (Abstract) and distributed process control (CL1, L67 to CL2, L5).

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Thalhammer-Reyero** (U.S. Patent 5,980,096) in view of **Datig** (U.S. Patent Application 2002/0198697), and further in view of **Schroeder et al.** (U.S. Patent 6,535,795) and **Treiber et al.** (U.S. Patent 6,654,649).

9.1 As per claim 10, **Thalhammer-Reyero**, **Datig** and **Schroeder et al.** teach the method of claim 9. **Thalhammer-Reyero**, **Datig** and **Schroeder et al.** do not expressly teach that the generic component comprises representations of parameters selected from the group consisting of the rate of change of the mass of vapor, rate of change of the mass of liquid, energy change of the vapor, energy change of the liquid, pressure equilibrium correlation, thermal equilibrium correlation, vapor and liquid enthalpy equations, equal pressure, gas law and volume correlation. **Treiber et al.** teaches that the generic component comprises representations of parameters selected from the group consisting of the rate of change of the mass of vapor, rate of change of the mass of liquid, energy change of the vapor, energy change of the liquid, pressure equilibrium correlation, thermal equilibrium correlation, vapor and liquid enthalpy equations, equal pressure, gas law and volume correlation (CL2, L44-45; CL3, L43-45; CL5, L16 to CL6, L9). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to

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modify the method of **Thalhammer-Reyero, Datig and Schroeder et al.** with the method of **Treiber et al.** that included the generic component being a flash column, because that would enable a multivariable process controller to achieve non-linear control of chemical process such as a polymer process and to optimize the control (CL1, L54-60; Abstract, L1-3).

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Thalhammer-Reyero** (U.S. Patent 5,980,096) in view of **Datig** (U.S. Patent Application 2002/0198697), and further in view of **Tan et al.** (U.S. Patent 6,263,255), **Schroeder et al.** (U.S. Patent 6,535,795) and **Treiber et al.** (U.S. Patent 6,654,649).

10.1 As per claim 18, **Thalhammer-Reyero, Datig and Tan et al.** teach the system of claim 17. **Thalhammer-Reyero, Datig and Tan et al.** do not expressly teach that the generic component comprises representations of parameters for a flash column. **Schroeder et al.** teaches that the generic component comprises representations of parameters for a flash column (CL14, L51-62).

Thalhammer-Reyero, Datig, Tan et al. and **Schroeder et al.** do not expressly teach that the generic component comprises representations of parameters for a flash column selected from the group consisting of the rate of change of the mass of vapor, rate of change of the mass of liquid, energy change of the vapor, energy change of the liquid, pressure equilibrium correlation, thermal equilibrium correlation, vapor and liquid enthalpy equations, equal pressure, gas law and volume correlation. **Treiber et al.** teaches that the generic component comprises representations of parameters for a flash column selected from the group consisting of the rate of change of the

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mass of vapor, rate of change of the mass of liquid, energy change of the vapor, energy change of the liquid, pressure equilibrium correlation, thermal equilibrium correlation, vapor and liquid enthalpy equations, equal pressure, gas law and volume correlation (CL2, L44-45; CL3, L43-45; CL5, L16 to CL6, L9).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'K. Thangavelu', with a stylized flourish at the end.

K. Thangavelu
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September 23, 2006